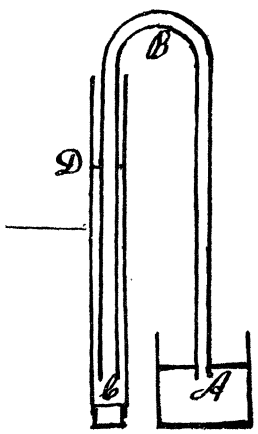
siphon tube, both legs of which are 10 cm. or 15 cm. longer than the barometric column. The bore of the tube should be small (about $\frac{1}{10}$ sq. mm.) to work well. Let one of the legs, *BC*, dip down into a larger tube *CD*, partly filled to *D* with mercury. Fill *ABC* with mercury, and start the siphon drawing mercury from *C* over to *A* in the usual way. In order to start the siphon the vertical height of *B* above the surface *D* of the mercury should be less than the length of a mercury barometer column, but as the flow continues, the mercury surface descends and keeps on descending until its vertical distance below *C* is considerably greater than this length.



To make this experiment work sufficiently well for demonstration purposes, excessive care in purifying the mercury and cleaning the glass is not necessary. Boiling the mercury in the actual tubes used, for instance, is superfluous. With ordinary redistilled commercial mercury and tubes cleaned with alcohol the writer has made the siphon work to a height of 70 cm. As the altitude of the University laboratory, where the experiment was performed, is a little over one mile, and the barometer pressure, therefore, only about 61 cm., this means that the siphon worked 9 cm. above the barometric height.

The most plausible explanation of the above fact is that the atmospheric pressure is not the only force pushing the mercury up the shorter leg. It is drawn up partly by the cohesive attraction of parts of the mercury for each other, and the column is kept from dwindling by the adhesive force exerted by the sides of the tube on the mercury.

It follows from the above that if a mercury siphon is placed under the receiver of an air pump, it can be made to work over a height of several centimeters, even though the air pressure is reduced to only a few millimeters. This experiment also has been shown to the writer's students. The apparatus was similar to that described above, except that the tubes were much shorter.

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FOSSIL SHELLS OF THE JOHN DAY REGION.

SINCE the publication about a year ago* of my paper on the 'Fossil Land Shells of the John Day Region,' etc., I have received from Professor John C. Merriam, of the University of California, a small collection of molluscan remains obtained by him in the same general locality. Professor Merriam's collection includes examples of the several species of land shells heretofore described,† namely, *Epiphragmophora fidelis anticedens, Polygyra Dalli, Ammonitella Yatesi præcursor* and *Pyramidula perspectiva simillima.* Of these four species there are numerous specimens and fragments. Dr. White's *Unio Condoni* apparently escaped detection. The foregoing represent all of the molluscan forms thus far reported from the John Day beds. Dr. White received his material from the late Professor E. D. Cope and Professor Thomas Condon, of the University of Oregon. Cope's specimens were obtained by Mr. Jacob L. Wortman, of the Army Medical Museum. These two collections included the same species.

Professor Merriam has made some interesting additions to the above brief list which are described below.

HELIX (EPIPHRAGMOPHORA?) DUBIOSA NOM. PROV.

Shell orbicular, flattened, discoidal, periphery angulated or obtusely carinated; whorls

* *Proc. Washington Acad. Science,* Vol. II., Dec. 28, 1900, pp. 651–658, pl. XXXV.

† Vide Dr. Charles A. White's paper 'On Marine Eocene, Fresh Water Miocene and other Fossil Mollusca of Western North America'; Bulletin No. 18, U. S. Geol. Survey, Washington, 1885, with two plates.

six or more, deeply sutured and exhibiting strong growth striæ. Apex whorls closely and slightly pitted. Aperture and umbilical region covered by a portion of the matrix in which the shell was imbedded.

Diameter (maximum), 24 mm., probably 26 to 26½ mm. when perfect. Elevation, about 10 mm. A sufficient portion of the shelly substance intact admits of the above description. Number of specimens, six; of these the individual described is the largest and most perfect. The smaller examples consist mainly of the upper whorls.

With more and better material it is quite probable the foregoing might prove to be an angulated, dwarfed, depressed aspect of the living *fidelis,* or *mormonum;* it also suggests the form known as *Hillebrandi.* Nearly all of the material is in a very unsatisfactory condition, with no color indications to assist in determination. While for these reasons the conclusions may be regarded as more or less arbitrary, the general character and relationship is believed to be fairly well pointed out.

PYRAMIDULA LECONTEI N. S.

Shell small, orbicularly depressed, widely and deeply umbilicated; whorls four and a half to five, rounded, closely and conspicuously ribbed except on the apex, which is nearly smooth; the ribbing extending into the umbilical cavity; the grooves between the ribs nearly as wide as the ribs are thick; the suture deep; aperture nearly circular or rounded lunate; edge of lip simple. Diameter (maximum), 8½ mm. Elevation, nearly 5 mm. A single example; the last whorl has been broken back somewhat; the maximum diameter was probably 9 to 9½ mm. The specimen appears to be scarcely mature. The number, prominence and regularity of the ribs make this a very pretty shell. The general facies suggests relationship with the extraordinary group of helicoid forms that are so widely distributed throughout the vast area denominated by Mr. W. G. Binney* the 'Central Province,' and listed by Dr. Pilsbry in his recent catalogue, as number 340† (*P. strigosa* and numerous races or varieties). A comparison of *P. Le-Contei* kindly made for me by Professor Dall, with the large series of the *strigosa* group in the National Museum, determines it, as he says, to be 'different from anything we have in the collection.'

In memory of the late Professor Joseph Le Conte, I have attached his name to the above form.

In addition to the species herein described, the material submitted to me by Professor Merriam included a small globose form about the size of a small pea; there are several examples, so disguised by adherent particles of matrix as to make it doubtful whether they belong to terrestrial or aquatic groups, with a presumption in favor of the first.

Partially exposed in portions of a fine compressed sediment of lacustrine origin are several casts of a very large *Limnæa,* suggestive in a general way of the circumboreal *L. stagnalis,* but so much distorted as to preclude a more definite description. For convenience this may be known provisionally as *L. maxima.*

Professor Merriam has now in preparation a paper on the paleontology of the John Day region, which will contain in detail the special data relating to the occurrence of the various forms above referred to as well as figures of the species I have described.

Robt. E. C. Stearns.

* 'Manual of American Land Shells,' Bull. 18, U. S. National Museum.

† 'Classified Catalogue of Land Shells of North America,' etc., Philadelphia, April, 1898.

CURRENT NOTES ON PHYSIOGRAPHY.

THE ISTHMUS OF PANAMA.

An essay on the 'Geology of the Central Portion of the Isthmus of Panama,' by Hershey (*Bull. Dept. Geol. Univ. Cal.,* II., 1901, 231–267), includes an account of the surface features in terms of the two chief cycles of denudation that have had effect there. The axial Cordillera de Veraguas, trending east and west, is described as a dissected plateau whose general surface, once a lowland of degradation, consisting in part of syenite and intrusive volcanic rocks, is now raised to an altitude of 3,000 feet. The valleys in it are deep, narrow, and steep-sided. Eliminating them, the district would be a high plateau with a width of 20 or 25 miles, arched a little along an east-west medial line, but otherwise